XC74WL4066SR

ETR1326_001

CMOS Logic

■GENERAL DESCRIPTION

XC74WL4066SR is dual analog switch manufactured using silicon gate CMOS processes. The small supply current, which is one of the features of the CMOS logic, gives way to high speed operations which enables LS-TTL.
With wave forming buffers connected internally, stabilized output can be achieved as the series offers high noise immunity.
As the series is integrated into a mini molded, MSOP-8B package, high density mounting is possible.

■APPLICATIONS

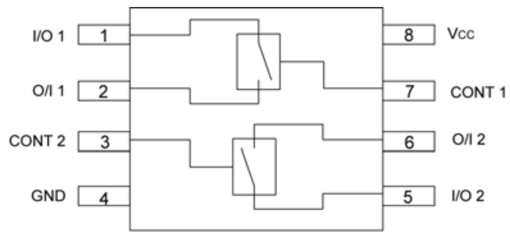
●Palmtops

●Digital equipment

■FEATURES

High Speed Operations : tpd = 1.5ns (TYP.) (V_{CC}=5V)
Operating Voltage Range : 2V ~ 5.5V
Low Power Consumption : 2 μA (MAX.)@Ta=25℃
Low ON Resistance : 12Ω (TYP.)
CMOS Logic Dual Analog Switch
Small Package : MSOP-8B

■PIN CONFIGURATION



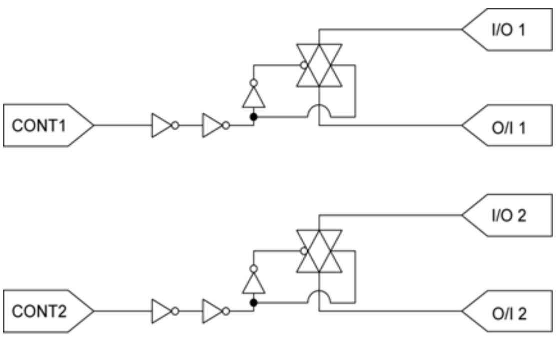
MSOP-8B
(TOP VIEW)

■FUNCTIONS

CONTROL	STATE
L	OFF
H	ON

H=High level
L=Low level

■LOGIC DIAGRAM



■ABSOLUTE MAXIMUM RATINGS

Ta=-40℃~85℃

PARAMETER	SYMBOL	RATINGS	UNITS
Supply Voltage	V_{CC}	-0.5~+6.0	V
Input Voltage	V_{CONT}	-0.5~+6.0	V
Output Voltage	Vi/o	-0.5~V_{CC}+0.5	V
Input Diode Current	I_{IK}	-20	mA
Output Diode Current	I_{OK}	±20	mA
Switch Output Current	$I_{I/O}$	±25	mA
V_{CC},GND Current	I_{CC},I_{GND}	±50	mA
Power Dissipation (Ta = 25℃)	Pd	300	mW
Storage Temperature Range	Tstg	-65~+150	℃

Note : Voltage is all ground standardized.

■RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	CONDITIONS	UNITS
Supply Voltage	V_{CC}	2~5.5	V
Input Voltage	V_{CONT}	0~5.5	V
Output Voltage	Vi/o	0~VCC	V
Operating Temperature Range	Topr	-40~+85	℃
Input Rise and Fall Time	tr,tf	0~200（VCC=3.3V）	ns
		0~100（VCC=5V）	

■DC ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	CONDITIONS		Ta=25℃			Ta=-40℃~85℃		UNITS
		V_{CC}(V)		MIN.	TYP.	MAX.	MIN.	MAX.	
High Level Control Input Voltage	V_{IH}	2.0		1.50	–	–	1.50	–	V
		3.0		2.10	–	–	2.10	–	
		5.5		3.85	–	–	3.85	–	
Low Level Control Input Voltage	V_{IL}	2.0		–	–	0.50	–	0.50	V
		3.0		–	–	0.90	–	0.90	
		5.5		–	–	1.65	–	1.65	
Peak ON Resistance	R_{ONmax}	2.0	V_{CONT}=V_{IH}	–	130	350	–	550	Ω
		3.0	V_{IN}=0~V_{CC}	–	22	50	–	65	
		4.5	$I_{IN/OUT}$=1mA	–	12	25	–	35	
ON Resistance	R_{ON}(1)	2.0	V_{CONT}=V_{IH}	–	23	50	–	65	Ω
		3.0	V_{IN}=GND or V_{CC}	–	14	30	–	40	
		4.5	$I_{IN/OUT}$=1mA	–	10	20	–	25	
Switch ON Resistance Differential	△R_{ON}	2.0	V_{CONT}=V_{IH}	–	13	35	–	55	Ω
		3.0	V_{IN}=0~V_{CC}	–	3	6	–	8	
		4.5	$I_{IN/OUT}$=1mA	–	2	4	–	6	
Power Off Leak Current	I_S(OFF)	5.5	V_{CONT}=V_{IL}, V_{IN}=V_{CC}, V_{OUT}=GND	–	–	±0.1	–	±1.0	μA
Power On Leak Current	I_S(ON)	5.5	V_{CONT}=V_{IH}, V_{IN}=V_{CC}, OR GND	–	–	±0.1	–	±1.0	μA
Control Input Current	I_{CONT}	0~5.5	V_{IN}=V_{CC} or GND	–	–	±0.1	–	±1.0	μA
Static Supply Current	I_{CC}	5.5	V_{IN}=V_{CC} or GND	–	–	2.0	–	20.0	μA

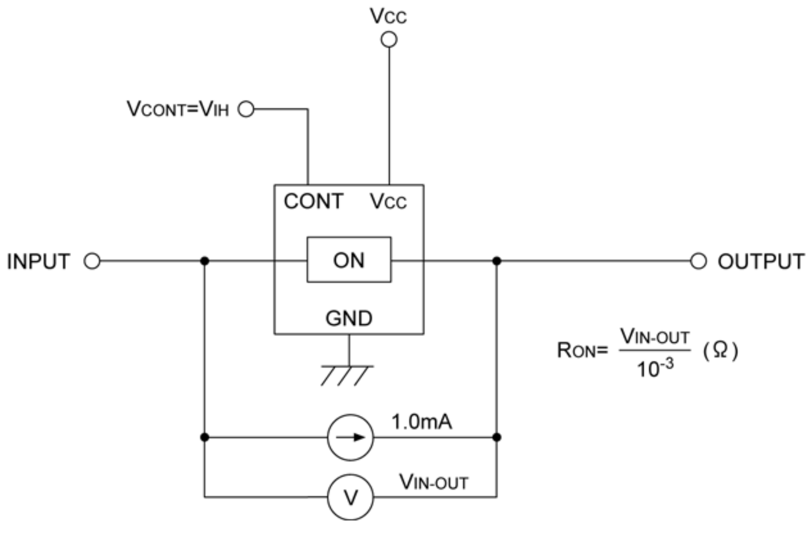
■SWITCHING ELECTRICAL CHARACTERISTICS

(tr=tf=3ns)

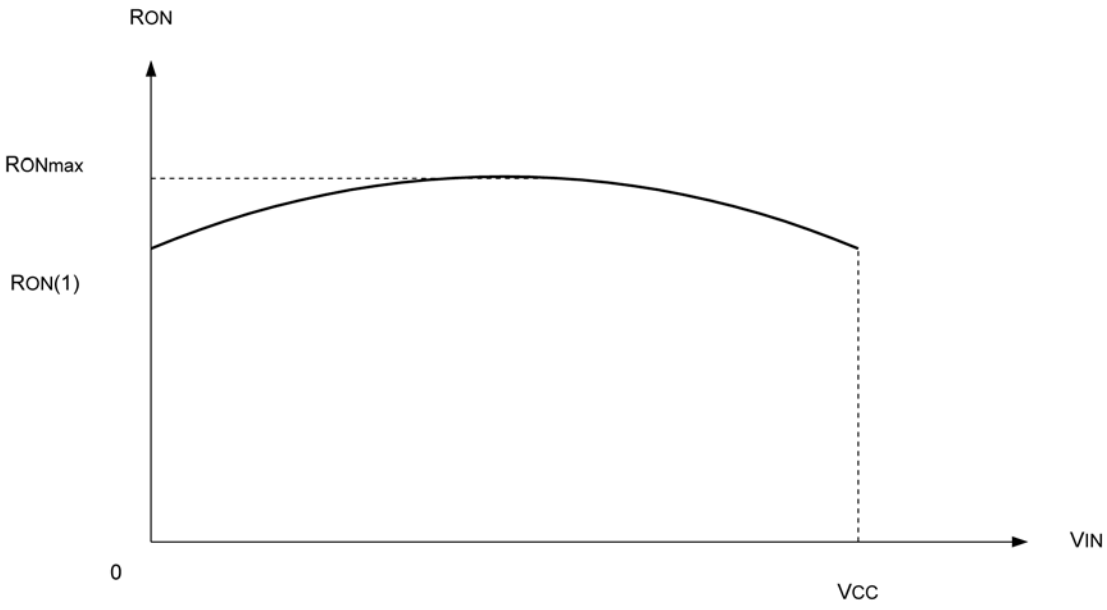
PARAMETER	SYMBOL	CONDITIONS			Ta=25℃			Ta=-40℃~85℃		UNITS
		C_L	V_{CC}(V)		MIN.	TYP.	MAX.	MIN.	MAX.	
Delay Time	t_{PLH} t_{PHL}	15pF	2.0		–	2.5	12.0	–	15.0	ns
			3.3		–	2.0	4.0	–	5.5	
			5.0		–	1.5	3.0	–	4.0	
		50pF	2.0		–	4.0	20.0	–	23.0	ns
			3.3		–	3.0	6.0	–	8.0	
			5.0		–	2.0	5.0	–	6.0	
Output Enable Time	t_{ZL} t_{ZH}	15pF	2.0	R_L=1kΩ	–	8.5	45.0	–	60.0	ns
			3.3		–	4.5	9.0	–	11.0	
			5.0		–	3.5	7.5	–	9.0	
		50pF	2.0	R_L=1kΩ	–	9.0	50.0	–	65.0	ns
			3.3		–	5.0	10.0	–	12.0	
			5.0		–	4.0	8.5	–	10.0	
Output Disable Time	t_{LZ} t_{HZ}	15pF	2.0	R_L=1kΩ	–	9.0	45.0	–	55.0	ns
			3.3		–	7.0	17.0	–	20.0	
			5.0		–	6.0	14.0	–	18.0	
		50pF	2.0	R_L=1kΩ	–	12.0	60.0	–	75.0	ns
			3.3		–	10.0	23.0	–	27.0	
			5.0		–	8.0	20.0	–	25.0	
Sine Wave Distortion Rate		50pF	3.0	R_L=10kΩ f_{IN}=1kHz	–	0.05	–	–	–	%
-3dB Band Width		50pF	3.0	R_L=600Ω $20\log10 \frac{V_{OUT}}{V_{IN}}$=-3dB	–	200	–	–	–	MHz
Feed Through (Switch off)		50pF	3.0	R_L=600Ω	–	-60	–	–	–	dB
Cross Talk (Control Switches)		50pF	2.0	R_L=600Ω f_{CONT}=1MHz	–	60	–	–	–	mV
			3.0		–	100	–	–	–	
			4.5		–	150	–	–	–	
Cross Talk (Between Switches)		50pF	2.0	R_L=600Ω f_{IN}=1MHz	–	-60	–	–	–	dB
			3.0		–	-60	–	–	–	
			4.5		–	-60	–	–	–	
Control Input Capacitance	C_{CONT}	–	–		–	5	10	–	10	pF
Switch Input/Output Capacitance	$C_{IN/OUT}$	–	–		–	6	–	–	–	pF
Feed Through Capacitance	C_{IN-OUT}	–	–		–	0.5	–	–	–	pF
Power Dissipation Capacitance	Cpd	–	–		–	13	–	–	–	pF

■ON RESISTANCE

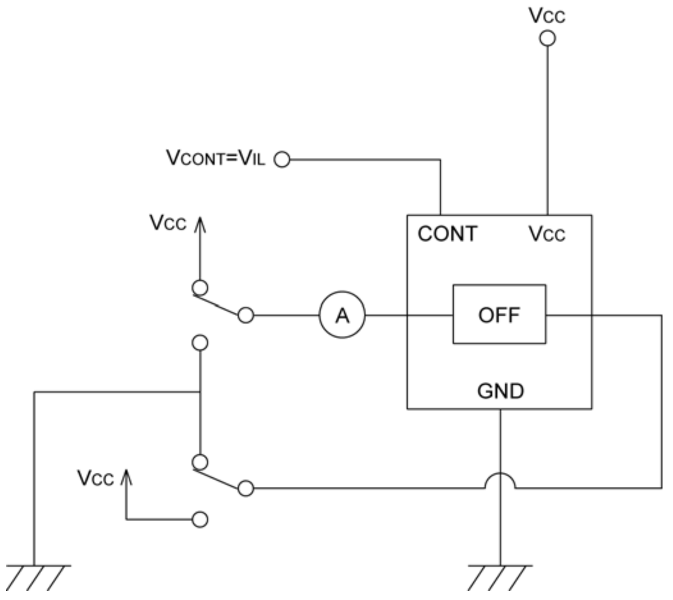
●Test Circuit



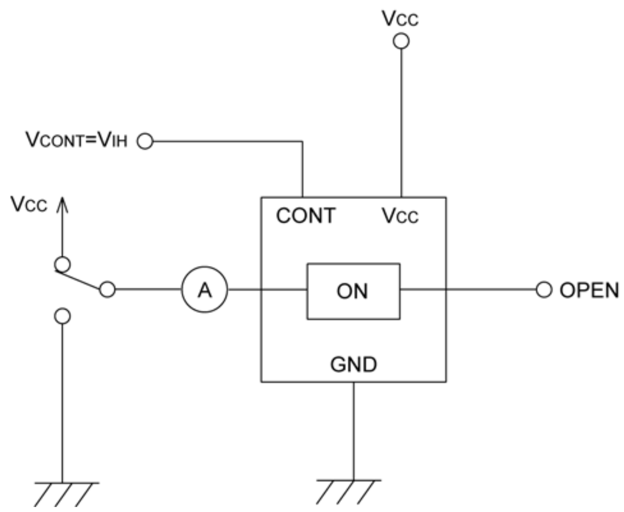
●Input Voltage Dependancies of ON Resistance



■POWER OFF LEAK CURRENT

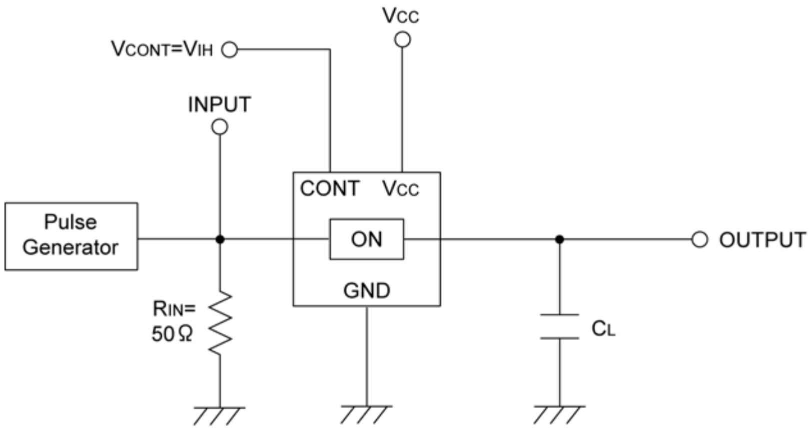


■POWER ON LEAK CURRENT

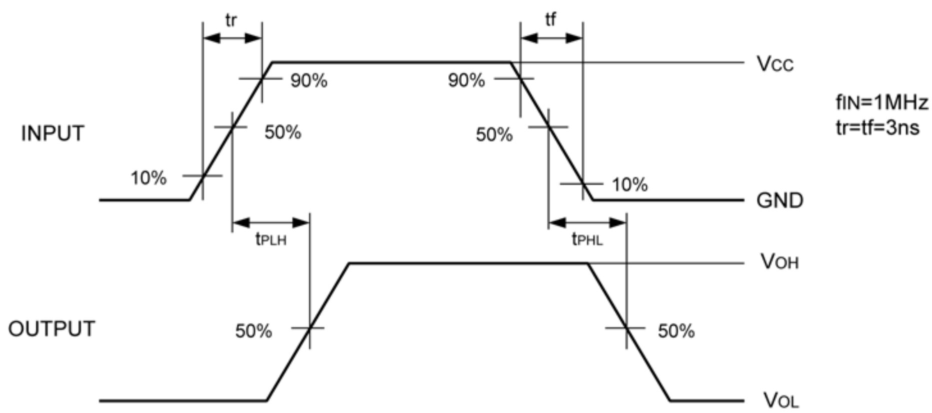


■DELAY TIME

●Test Circuit

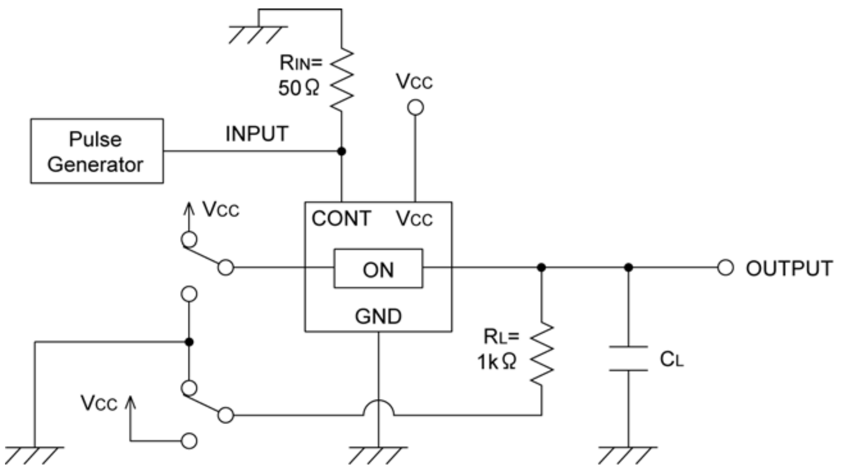


●Waveform

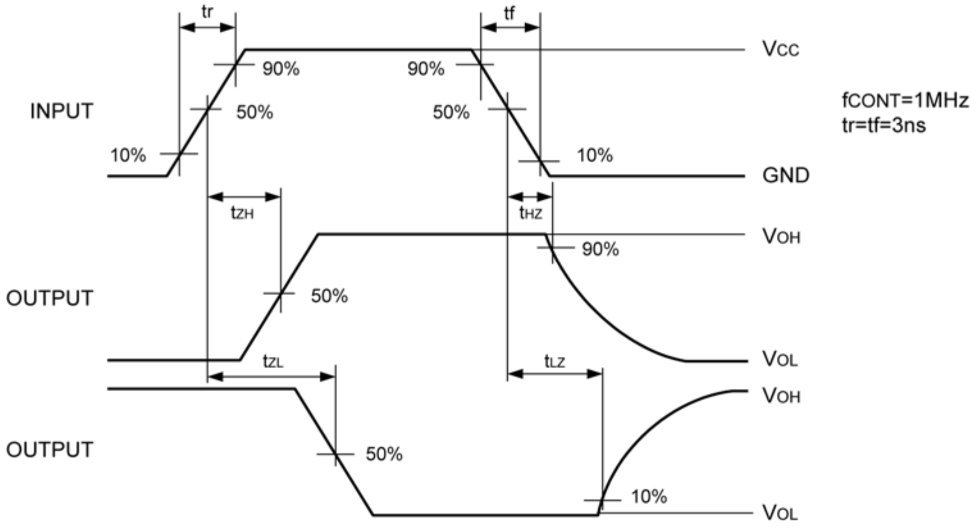


■OUTPUT ENABLE TIME, OUTPUT DISABLE TIME

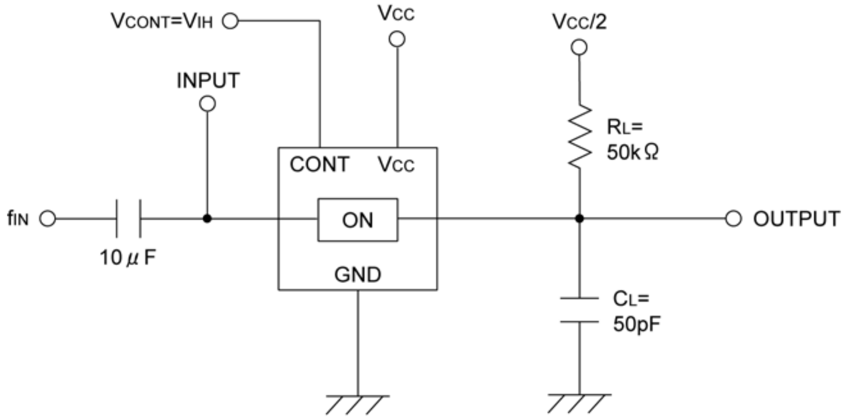
●Test Circuit



●Waveform

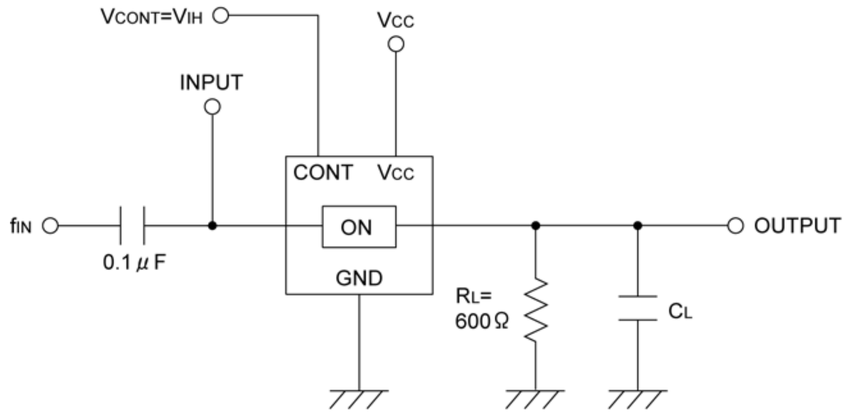


■SINE WAVE DISTORTION RATE



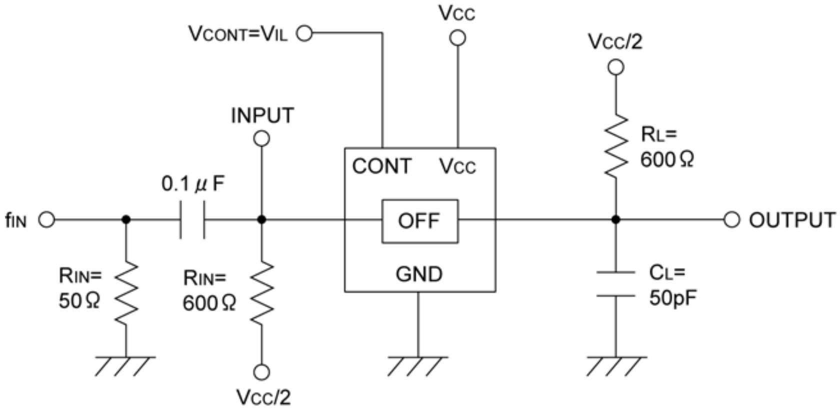
* Input by sine wave

■-3dB BAND WIDTH



* Input by sine wave (V_{IN}=0dBm, f=1MHz)

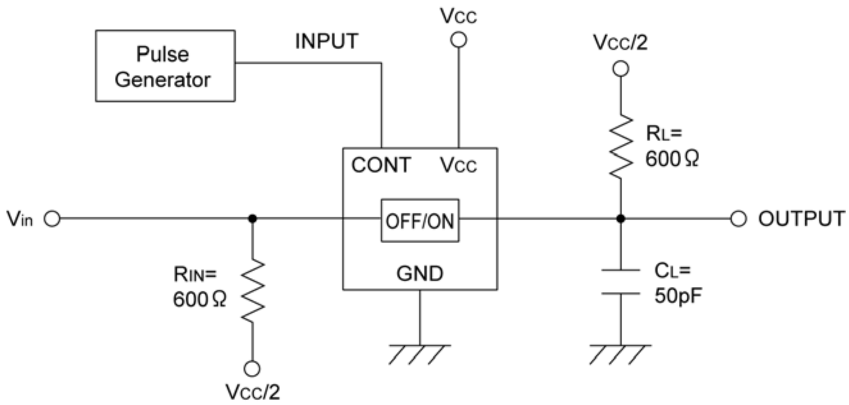
■FEED THROUGH TEST CIRCUIT



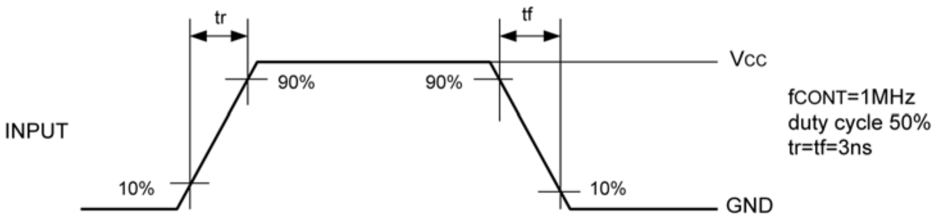
* Input by sine wave (VIN=0dBm, f=1MHz)

■CROSS TALK (CONTROL INPUT → SWITCH OUTPUT)

●Test Circuit

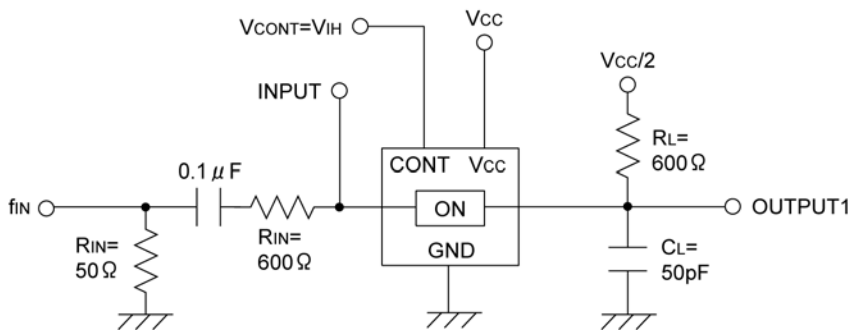


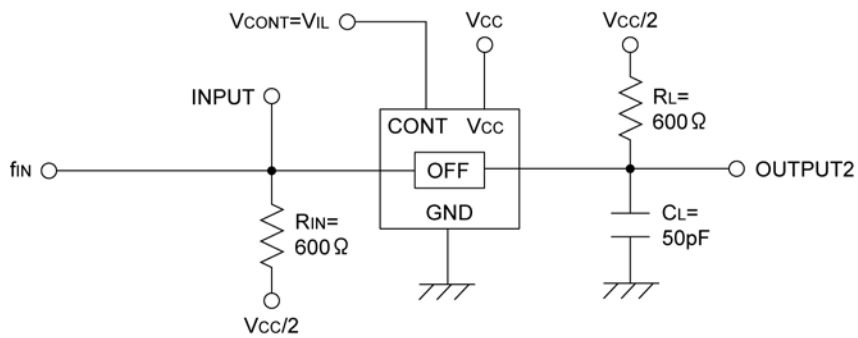
●Waveform



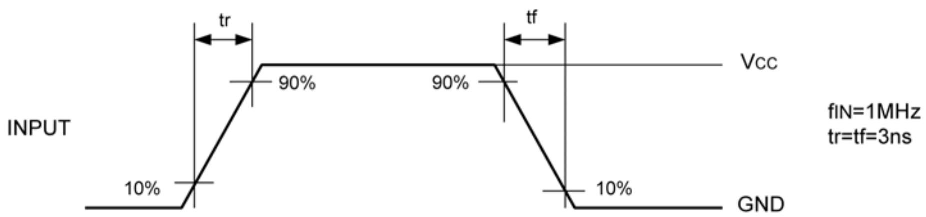
■CROSS TALK (BETWEEN SWITCHES)

●Test Circuit





●Waveform



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